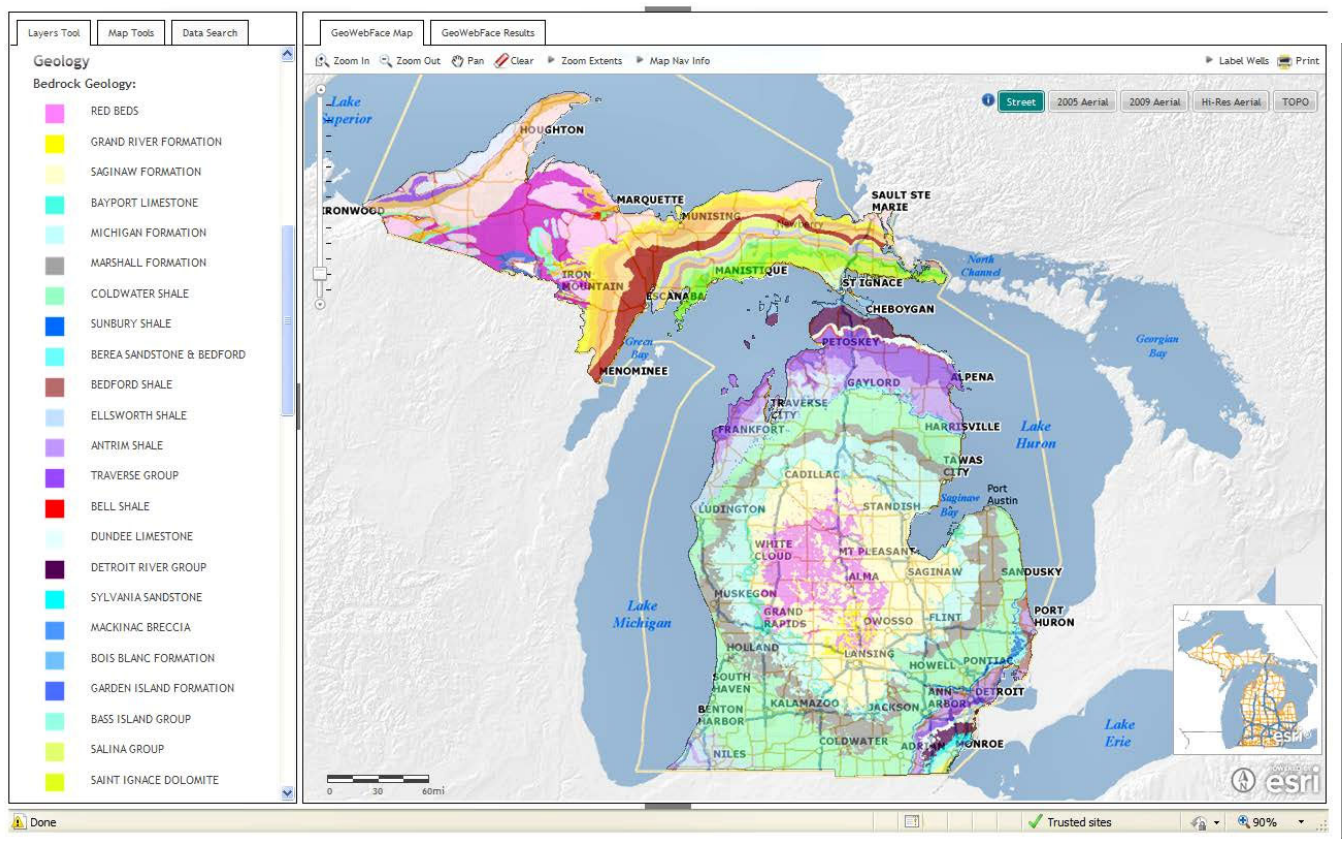


Michigan Department of Environment,
Great Lakes and Energy



GEOWEBFACE

Web Based Application to Access
Michigan Maps and Geologic Information



*This Bedrock Geology Map was made using the GeoWebFace.
Learn how to make your own version and many more with this*

User Guide

2019

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Introduction

The GeoWebFace originated in and is sponsored by Michigan Department of Environment, Great Lakes, and Energy (EGLE), Oil, Gas, and Minerals Division (OGMD). Base map features and image backdrops are included as well as layers specific to this application. With the GeoWebFace, you can locate oil and gas wells and mining sites, and can display associated geologic information.

The internet address for the GeoWebFace web page is: <http://www.michigan.gov/deggeowebface> (that is *deg geowebface* - one-word - all lower case).



Access the **GeoWebFace Application** at: <http://ww2.deq.state.mi.us/geowebface>



The Office of Oil, Gas, and Minerals is providing this application to allow users to view, on a Michigan map, information about sites regulated under:

- ❖ Part 615 “Oil and Gas Rules and Regulations”
- ❖ Part 625 “Mineral Wells”
- ❖ Part 631 “Mine Reclamation”
- ❖ Part 632 “Nonferrous Metallic Mining”
- ❖ Part 635 “Coal Mines” and
- ❖ Part 637 “Sand Dune Mining.”

The GeoWebFace can display map layers with Glacial, Bedrock, Geophysical and Structural Geology as well as State Mineral Rights information to suit your interests.

The GeoWebFace provides internet and [FTP](#) access to digital files and information from the OOGM Oil-and-Gas-database to anyone, anytime, anywhere with internet access.

System Requirements

In order to use the GeoWebFace you need access to the Internet. The GeoWebFace was designed and tested using Microsoft Internet Explorer 8. Other contemporary web browsers can be used. However, some screens may look differently and some procedures may need to be modified. The speed at which maps are drawn or refreshed is in part a function of the speed of your internet connection and the computer equipment you are using. Some selections, like a number of oil and gas wells, may take a moment or two to gather the data and display it. The response to FTP is likewise a function of system resources and configuration as well as the number of users accessing the server.

Contact Us

If you have any questions, comments, contributions or concerns please contact us. Feel free to make suggestions for additions, report omissions or errors and or provide examples to help expand the usefulness of the GeoWebFace. Send your comments or questions to the GeoWebFace Team at:

Michigan Department of Environmental Quality
Office of Oil, Gas, and Minerals
P.O. Box 30256
Lansing, MI 48909

or

email the GeoWebFace Team at DEQ-GeoWebFace@michigan.gov

or

use the GeoWebFace Feedback form <http://ww2.deq.state.mi.us/geowebface/feedback.aspx>

Acknowledgements

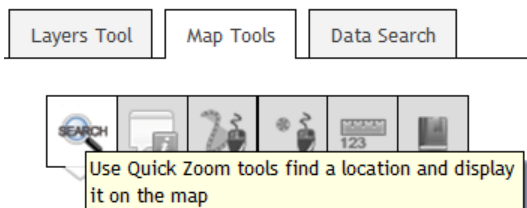
This application is the result of the cooperative creative partnership of Department of Environment, Great Lakes, and Energy - Oil, Gas, and Minerals Division and the Michigan Department of Technology, Management & Budget (DTMB), Center for Shared Solutions and Technical Partnerships (CSSTP). The efforts to develop the GeoWebFace were in large part due to the efforts and expertise contributed by; EGLE, OGMD; John Esch, Jamie Bohr, Kevin Carey, Steven E. Wilson and from DTMB, CSSTP; Scott Reynolds, Gary Taylor, Ron Thomas, and C. R. Reszka.

The icon **GWF**▶ is used to mark notes or sidebars that are additional information.

There are many pieces that make up the GeoWebFace. The array of options might be confusing at first, but you will likely find that there is a subset of options that will provide the information you want.

Using the **Bookmark** function allows you to save your maps so they can be reused or allow you to return to where you ‘left off’, not to mention being able to share maps via email.

GWF▶ GeoWebFace uses “pop-ups”. Make sure pop-ups are enabled on your computer.

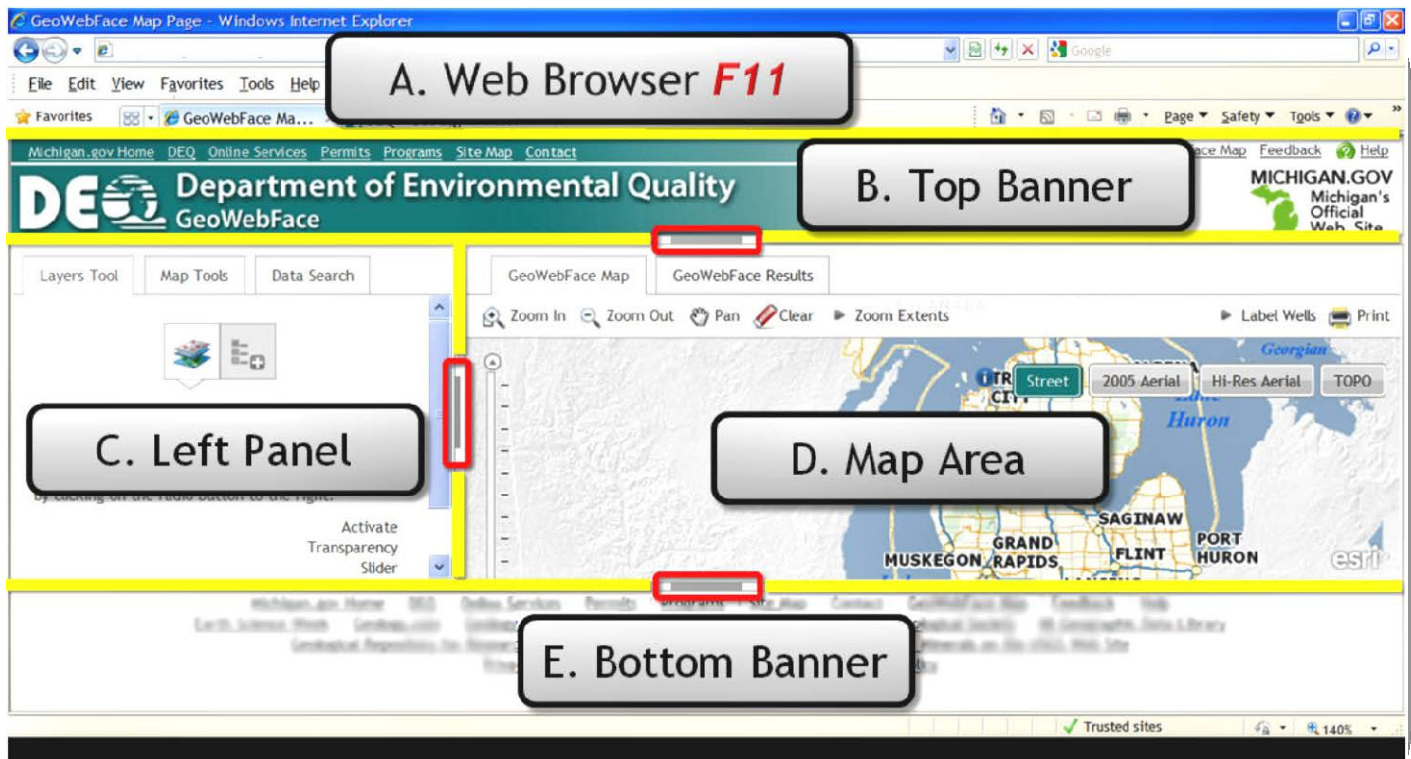


GWF▶ the GeoWebFace uses **tool tips**. When you mouse over an icon, a tool tip box will be displayed.

The graphic to the left is an example of a **tool tip** for Map Tools / Quick Zoom (Search) icon.

Version 2012.04.06

Parts of the Display



There are five main components to the display. Each is separated by a yellow line in the figure above.

A. Web Browser: The uppermost display area is occupied by various web browser elements. These can be removed by pressing the F11 key. To bring the web browser components back (especially after you are done with the GeoWebFace) press F11 again.

B. Top Banner: The next banner from the top has information about the Department of Environmental Quality. It can be opened and closed by selecting the gray bar over the GeoWebFace Results tab that is highlighted by a red box.

C. Left Panel: The 'Left Panel' is where many of the map interface controls are located. It can be opened and closed by selecting the vertical gray bar that is highlighted by the vertical red box.

D. Map Area: Where the results of the options that have been chosen are displayed.

E. Bottom Banner: The bottom panel displays links to selected web sites. It can be opened and closed by selecting the lowest gray bar that is highlighted by a red box.

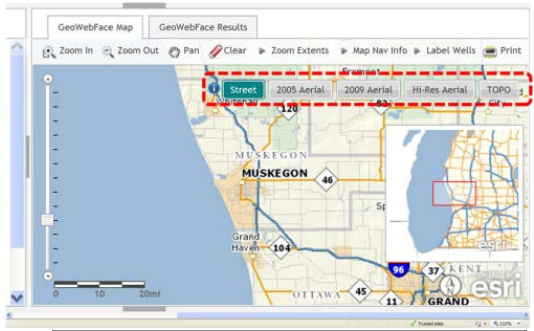


GWF ►► Occasionally the GeoWebFace may stop or 'freeze up'. To resume using the GeoWebFace press the F5 key.

This intervention will restart the application. The reset goes back to the startup screen and will require reentering the options you had selected prior to the reset.

Map Area - Base Map Options

There are several base maps that can be selected.



The map to the left shows the location of the base map options.

The icons shown below allow the user to select different base maps on which they can display the different layers and select criteria. The active icon is green. Street is the default base map.

Street

Street, road map

Selecting the **Street** view icon displays a street map. This view also includes lakes, waterways, and political boundaries when sufficiently zoomed in.

2005 Aerial

2009 Aerial

Aerial photograph

Selecting the **2005** or **2009 Aerial** view icon displays the NAIP (National Agriculture Imagery Program) aerial mosaic. An information box about the imagery will also appear. It can be closed by selecting the x in the top right-hand corner.

Hi-Res Aerial

Hi-Resolution Aerial photo

Selecting the **Hi-Res Aerial** view icon displays aerial imagery in the highest resolution available for the area. Coverage varies across the state.

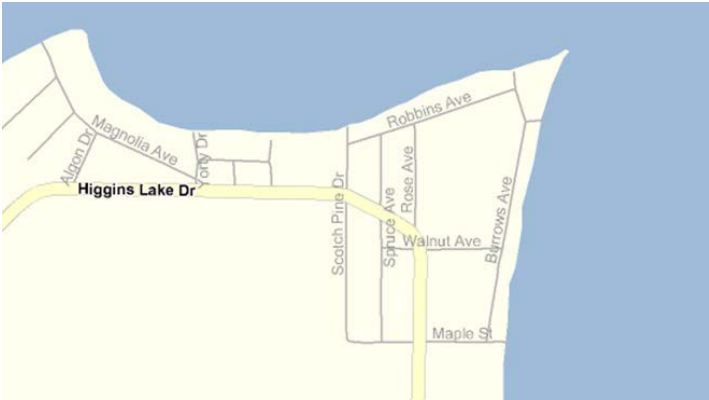
TOPO

Topographic map

Selecting the **TOPO** icon displays the topographic map of the area. The topo base map is most useful when zoomed in. It is based on the USGS 1:24,000 topographic quadrangle maps. Elevations are shown by the brown contour lines.



Selecting the information icon displays information regarding the aerial imagery provided. Selecting X closes this screen.



Street

Street zoomed in to show details



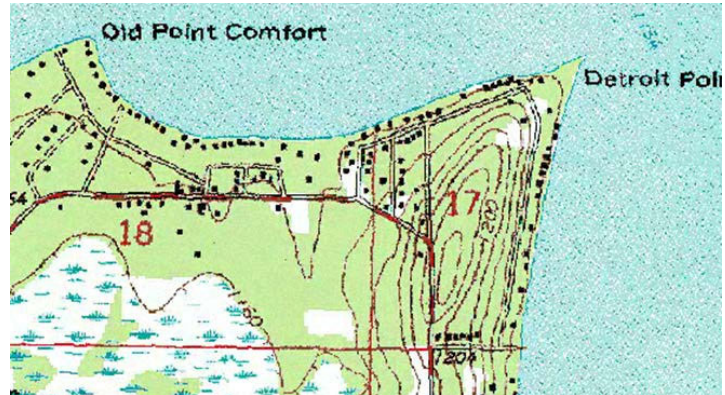
2005 Aerial

Aerial photograph



Hi-Res Aerial

High resolution aerial photograph



TOPO

Topographic map

CWF note hill in section 17

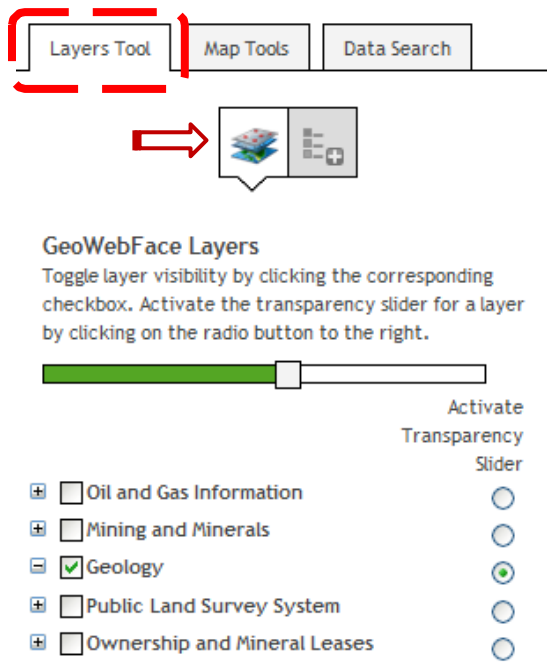


Location Window is seen in the lower left of the Map Area. It shows the location of the Map Area in the context of a larger area of the State.

CWF This Location Window example is from a map that was zoomed into an area (red rectangle) in the western central part of the southern peninsula.

Left Panel - Layers Tool tab

Layers Tool tab



The **Layers Tool tab** allows you to select which layers will be displayed on the map. The major layer categories in the GeoWebFace are:

- ① **Oil and Gas Information**
- ② **Mining and Minerals**
- ③ **Geology**
- ④ **Public Land Survey System**, and
- ⑤ **Ownership and Mineral Leases**.

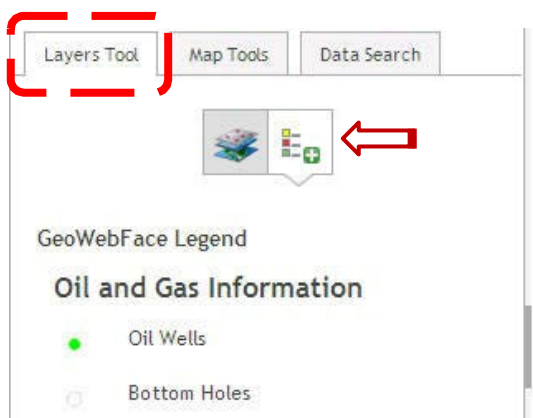
To open a major category, select the plus sign “+” to the left of it to see the sub layers. All layers can be turned on and off (toggled). These features will only appear on the map if the layer has a check mark in the box to the left.

There are over sixty layers or types of information that can be added or removed as you develop your map.

Any combination of layers can be displayed.

A [list of layers](#) and descriptions is available on the GeoWebFace main web page.

GWFF► The GeoWebFace is focused primarily on Michigan oil and gas well data, thus some of the functionality for tools such as **Identify** and **Labeling** only work on the oil and gas well locations.



Selecting the **Legend** icon will turn on the map legend. The legend will reflect the layers and features that have been turned on. The Legend icon displays the associated symbols of the layers that are checked. Depending on the layers selected, you may need to scroll to see the entire legend.

Layers will be added and updated on a regular basis, so check back often.

It is typical that you will toggle between the Layers and Legend options many times as you define and develop your map.

GWFF► Major layer categories need to be selected (checked) before sub layers can be displayed.

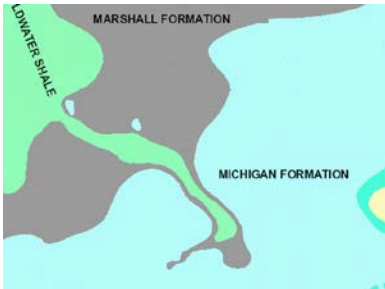
Layers Tool - Transparency Slider



A **Transparency Slider** can be activated by selecting the appropriate radio button to the right of the major layer category. This example has the slider set at about fifty percent. Once the Slider is activated it remains on the screen.

Moving the transparency slider to the left increases the transparency of the selected layer. Increasing transparency makes it easier to “see through” the chosen layers.

Moving the transparency slider to the right decreases the transparency of the selected layer. Decreasing transparency makes the active layer more opaque.



Bedrock Geology at zero percent transparency which makes them opaque, blocking the base image.



Bedrock Geology at about fifty percent transparency, some of the base image is visible.



Bedrock Geology at one-hundred percent transparency, the bedrock effectively disappears.

The transparency slider affects all of the sub layers that are checked within a layer category.

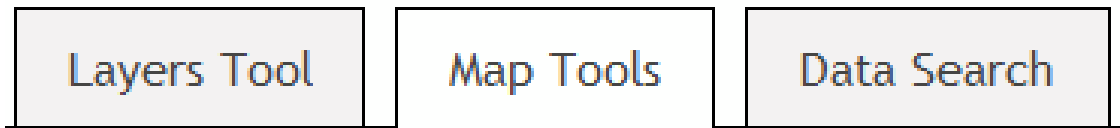
The effect of the transparency slider is not reflected in the legend.

The effect of the transparency slider is not reflected some printing functions.

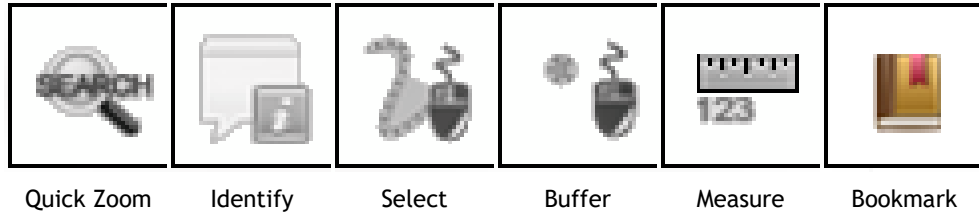
GW► When switching between tools the screen may freeze. If that occurs press the F5 key or [Ctrl + F5].

Left Panel - Map Tools tab

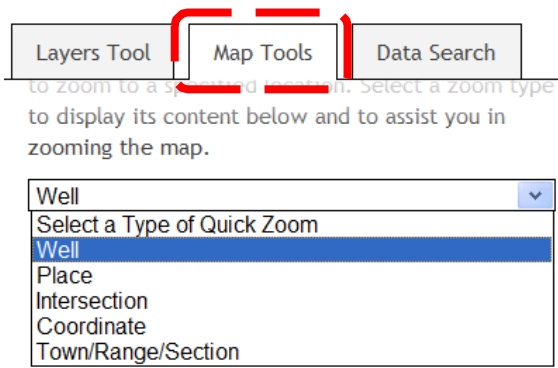
The **Map Tools** tab has six main functions. Selecting any of these options will open additional dialog boxes with additional options to enter information.



Map Tools tab



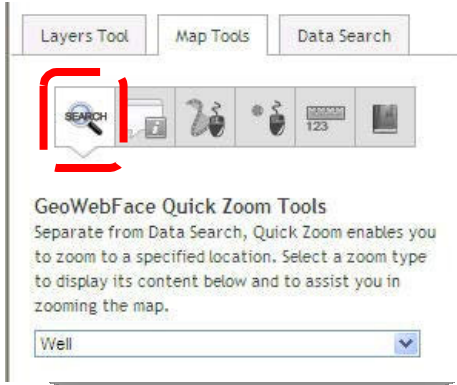
Map Tools - Quick Zoom = Search



Quick Zoom allows you to zoom to specific locations of the Map Area. Locations can be found by entering information about:

- ① **Well**, (Permit Number, API Number, Well Name, Company Name, Field Name, or PRU)
- ② **Place**, (County, Township, City, Address)
- ③ **Intersection**,
- ④ **Coordinate**, or
- ⑤ **Town / Range / Section**.

Map Tools - Quick Zoom - Well

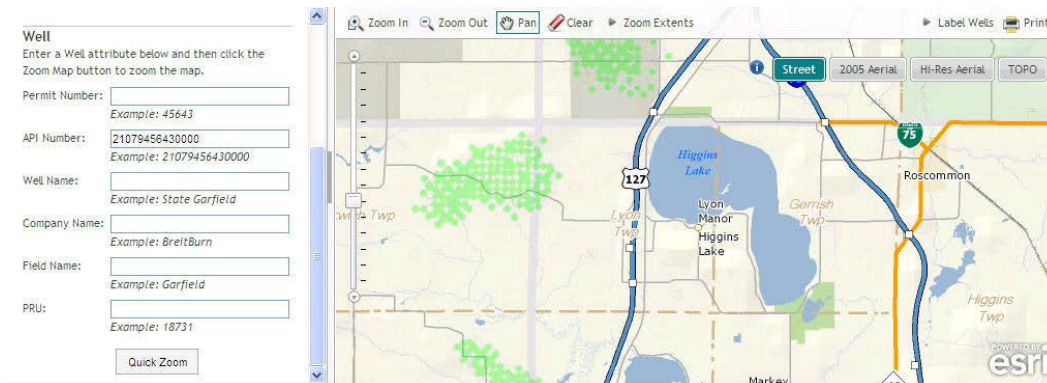


From the dropdown list select the **Well** option.

To zoom to a specific oil and gas well(s), enter a well attribute (Permit Number, API Number, Well Name, Company, Field etc.) and then select **Quick Zoom**.

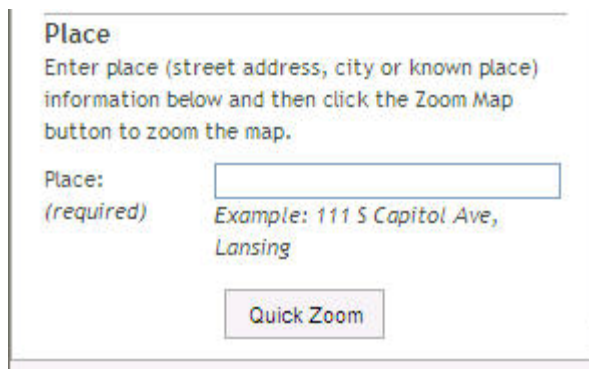
When Quick Zoom finds an oil and gas well(s), it will zoom to that well(s), then select its point on the map, and display information about the well(s) on the GeoWebFace Results page.

GWFF ▶ If you return to Quick Zoom be sure to clear out the data from your previous query.



GWFF ▶ The Map Tools, Quick Zoom, Well is similar to Map Tools, Data Search

Map Tools - Quick Zoom - Place



To zoom to a place, enter a street address, or the name of a city, county or township, then select **Quick Zoom**.

Depending on what you enter, GeoWebFace may find more than one location matching your query.



GeoWebFace Quick Zoom Tools

Separate from Data Search, Quick Zoom enables you to zoom to a specified location. Select a zoom type to display its content below and to assist you in zooming the map.

Place

Place

Enter place (street address, city or known place) information below and then click the Quick Zoom button to zoom the map.

Place: (required)
Example: 111 S Capitol Ave, Lansing

Quick Zoom

For example, if, you type in “Clinton” then select Quick Zoom, the GeoWebFace application will find more than one response matching the query.

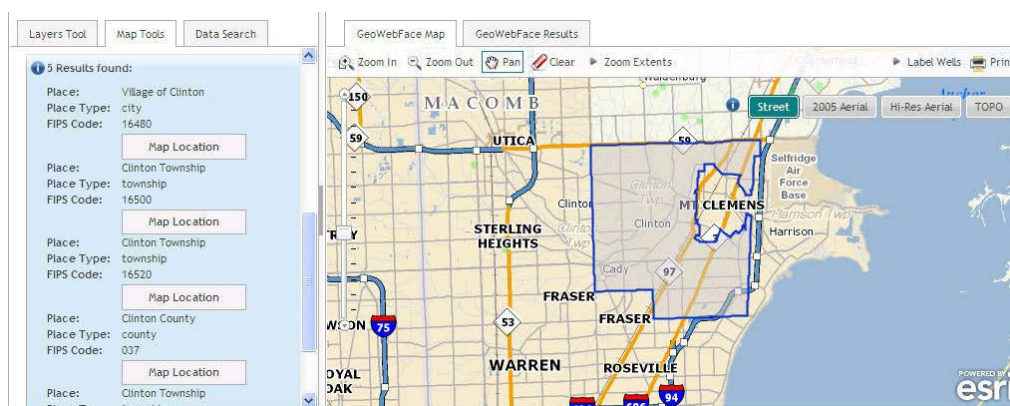
Because there is

- 1 Village,
- 3 Townships and
- 1 County

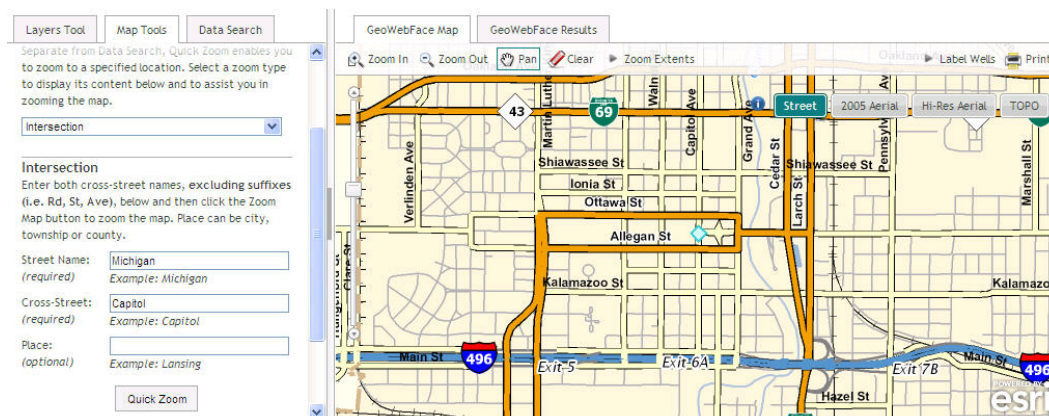
with Clinton in the name you get 5 responses.

Retype the information (like township) in the place input box, or choose the results you want by selecting the appropriate Map Location button below the choice you want.

The Quick Zoom results for the second Clinton Township is illustrated below.



Map Tools - Quick Zoom - Intersection



To zoom to a specific road intersection, enter a street name, a cross-street, and a place if necessary, then select **Quick Zoom**.

If the query finds a match, it will zoom to that intersection, and mark a corresponding point on the map.

GWF ▶ If you change the background to one of the Aerial photograph options, and the map is zoomed in close enough, you can get an overhead view of the buildings in the area.

Map Tools - Quick Zoom - Coordinate

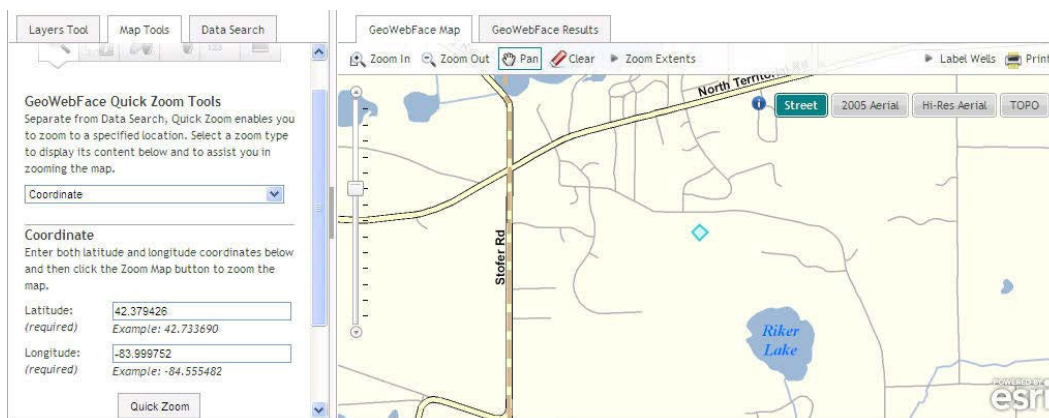
Coordinate
Enter both latitude and longitude coordinates below and then click the Zoom Map button to zoom the map.

Latitude:
(required) Example: 42.733690

Longitude:
(required) Example: -84.555482

To zoom to a specific latitude and longitude coordinate pair, enter latitude and longitude in decimal degrees, and then select **Quick Zoom**.

When the query finds the coordinate, it will zoom to that point and display it on the map.



Results of the coordinate **Quick Zoom** search described above.

Map Tools - Quick Zoom - TRS

Town/Range/Section
Select the Town from the dropdown list, proceeded by Range, and then Selection. After the three dropdowns are populated, click the Zoom Map button to zoom the map.

Town:
(required) Example: 42.733690

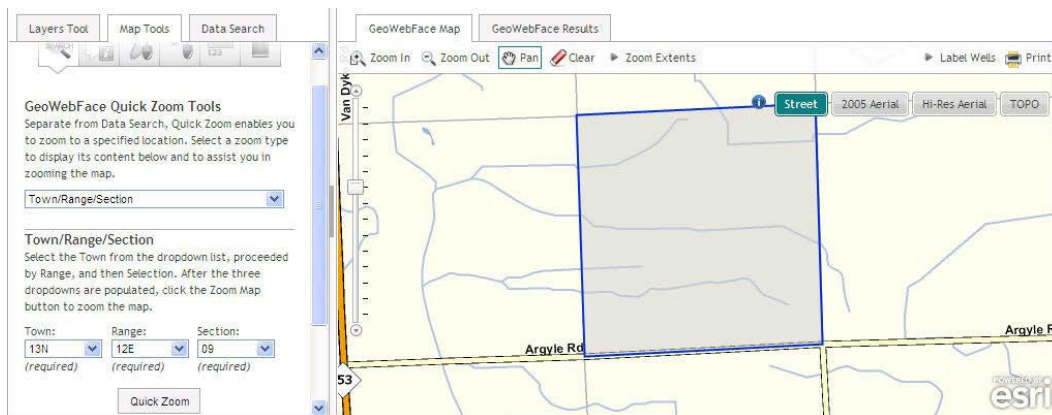
Range:
(required) Example: -83.999752

Section:
(required) Example: -84.555482

To zoom to a specific Town/Range/Section (TRS) choose the town, range, and section from the dropdown boxes. The range box will populate once the town is chosen, and the section box will populate once the range is chosen.

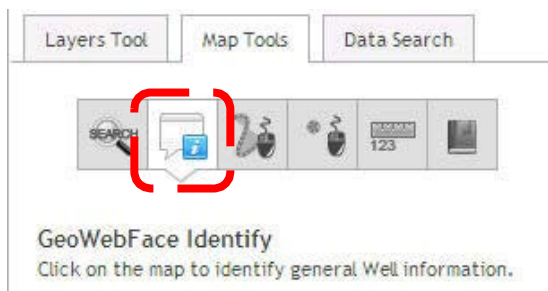
GeoWebFace will zoom to and select the section on the map.

GWFF ► If you don't see the number you want in the dropdown box, you can scroll down or simply type in the number in the data display area. The dropdown list will also give you a template for entering information.



GeoWebFace will zoom to and select the section on the map.

Map Tools - Identify



The **Identify** tool displays general information for a selected oil and gas well or the latitude and longitude of a point not associated with a well.

To use identify, you can select a point or well on the map by clicking on it. When you click on an oil and gas well spot, general information about the well will be displayed.

Identify only applies to oil and gas well bottom hole locations.

GeoWebFace Identify

Click on the map to identify general Well information.

API Number:	21037230300000
Permit Number:	23030
Lease Name:	WATTS, FRED
Well #:	1
Status:	Plugging Approved
Total Depth:	5526
Producing Formation:	Null
Latitude:	43.0441
Longitude:	-84.75265
Place:	Lebanon
County:	Clinton
TRS:	08N04W35
Map-click Lat:	43.04413
Map-click Lon:	-84.75267

Clear Identify

Buffer Result(s)

The result of an Identify displays a summary table to the Left Panel of the map.

The **Identify** results for an oil and gas well can be seen to the left.

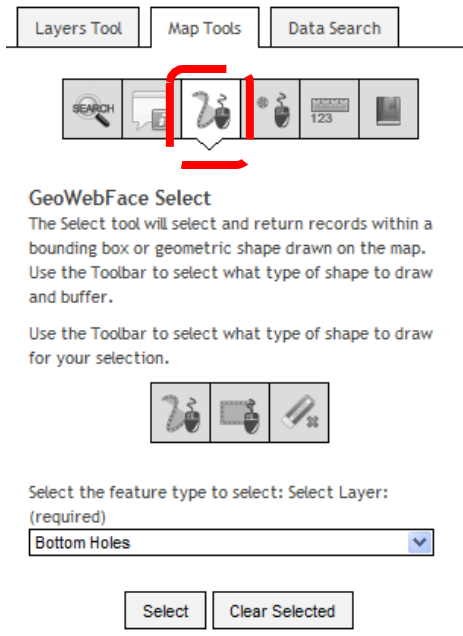
The abbreviated **Identify** results for **point** on the map, that is not an oil and gas well, can be seen to the right.

GeoWebFace Identify

Click on the map to identify general Well information.

Place:	Summit
County:	Mason
TRS:	17N18W36
Map-click Lat:	43.82203
Map-click Lon:	-86.41503

Map Tools - Select

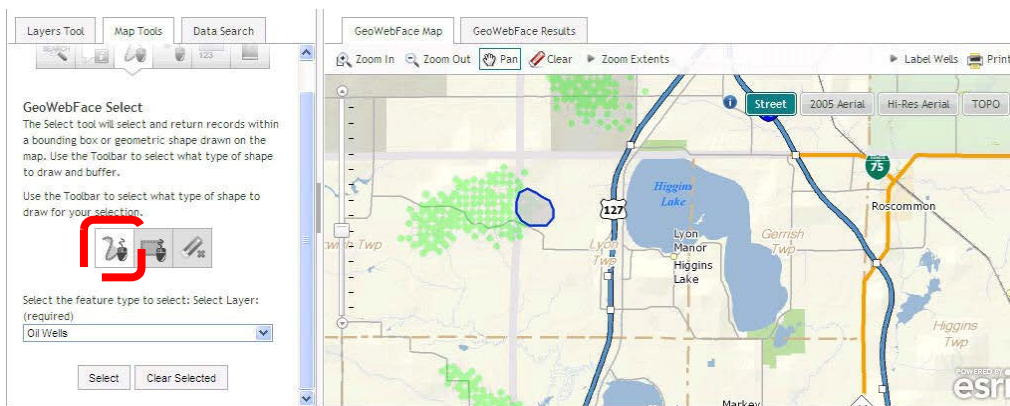



The **Select Tool** allows you to select one or more oil and gas wells from a map layer using a drawn shape or a bounding box. Selected points may be buffered and the results returned as data from the OOGM oil and gas database.

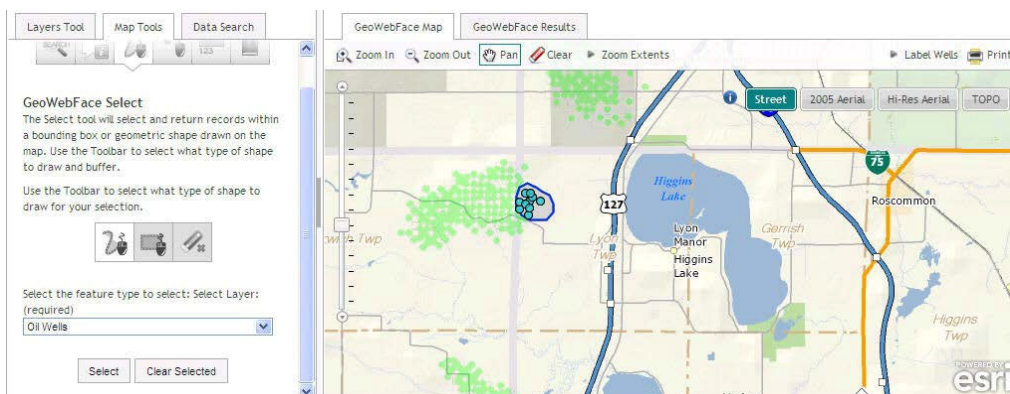
Data for the selected well or wells is displayed on the GeoWebFace Result page. Data can be downloaded but is limited to 200 wells.

To see the map select the GeoWebFace Map tab.

Selecting the Clear Map Graphics icon,  will clear all polygons and selections.

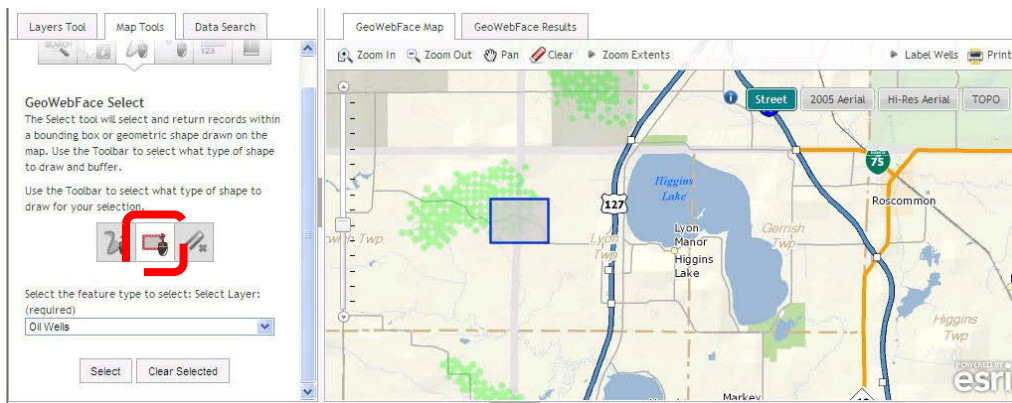



To select an area using a polygon, press . Select the map and use the mouse to draw a line around the area of interest. Releasing the mouse will complete the polygon.



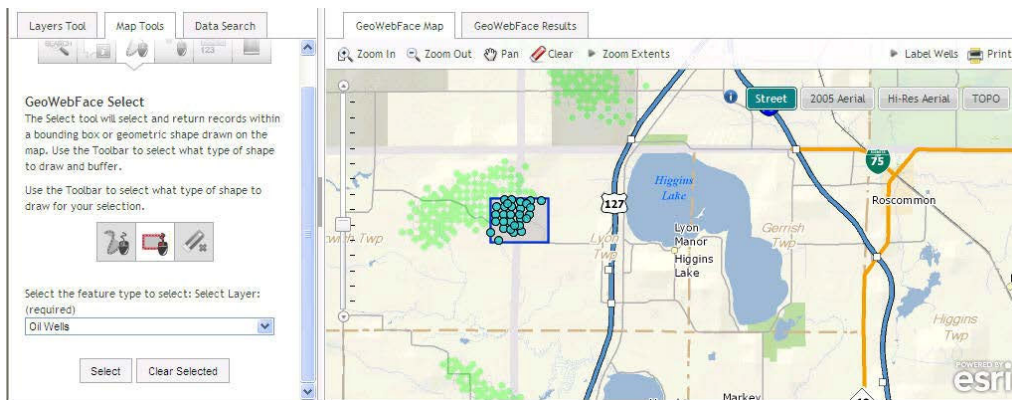
Pressing **Select** will select all of the oil and gas wells that intersect the polygon. Pressing **Clear Selected** button will clear the selection and the polygon.

Data for the selected oil and gas wells is displayed on the GeoWebFace Result page. Data can be downloaded but is limited to 200 wells.



To select an area using a **Bounding Box**, press the  icon.

Move the mouse to one corner of the area of interest, then press and hold the mouse button and drag the pointer to the opposite corner then release the mouse button to select the area.

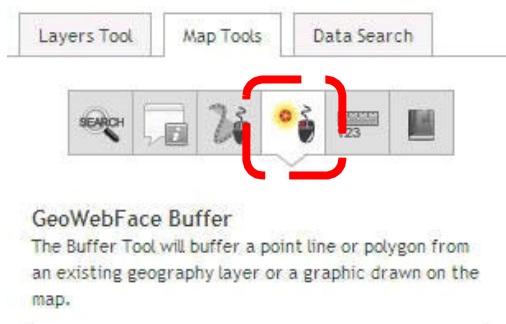


Pressing **Select** will select all wells that intersect the bounding box. Pressing **Clear Selected** will clear the selection and the bounding box.

Data for the selected oil and gas wells is displayed on the GeoWebFace Result page. Data can be downloaded but is limited to 200 wells.

Selecting the Clear Map Graphics icon  will clear all polygons and selections.

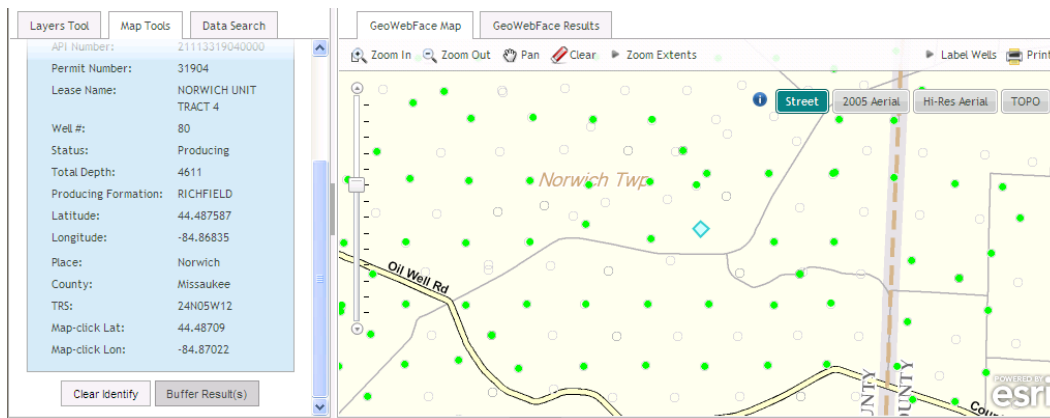
Map Tools - Buffer



The buffer tool allows you to select an area around a well, point, line, or polygon from an existing geography layer or graphic drawn on the map and select information in the combined original and buffered area.

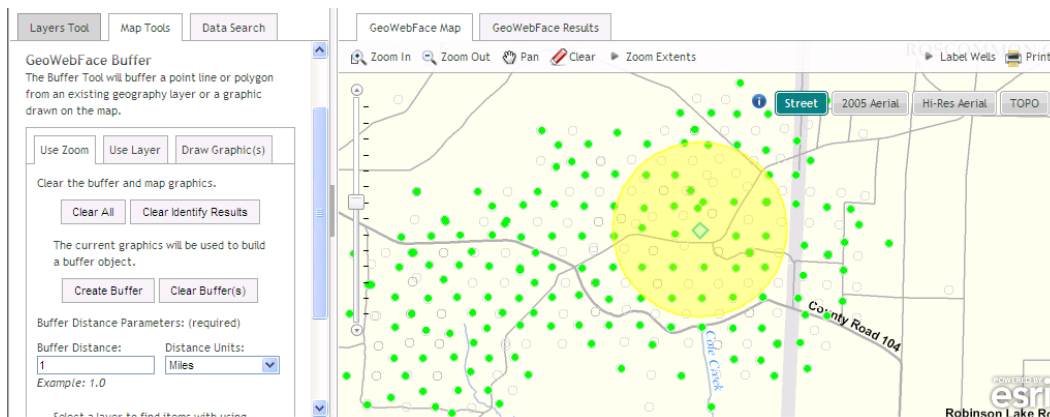
This is especially useful when used with GeoWebFace Results tab. Data for the selected oil and gas wells is displayed on the GeoWebFace Result page. Data can be downloaded but is limited to 200 wells.

Map Tools - Buffer - Use Zoom tab

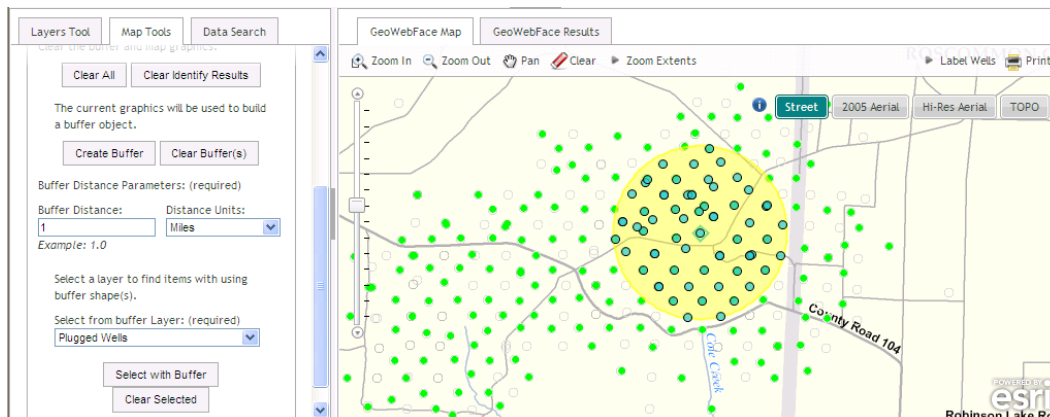


You can use zoom to buffer a highlighted point. First an oil and gas well must be identified, using the Identify tool.

The results of the identify tool can be buffered. Clicking the Buffer Result(s) icon will take the user to the buffer menu.



To create the buffer, the buffer's distance and units must be chosen. Units may be in miles, feet, kilometers, or meters.



Once the buffer is created, a layer can be chosen from which to select points. Clicking **Select with Buffer** will select points of the chosen layer which intersect the buffer area.

Map Tools - Buffer - Use Layer Tab

You can use a layer to buffer a highlighted point. First a layer must be chosen from the drop-down box under **Buffer Layer**. Then a point may be selected on the map. It will be highlighted in blue.

To create the buffer, the buffer's distance and units must be chosen. Units may be in miles, feet, kilometers, or meters.

Once the buffer is created, a layer can be chosen from which to select points. Clicking **Select with Buffer** will select points of the chosen layer which intersect the buffer area.

Map Tools - Buffer - Draw Graphic

Buffers may also be created around graphics you draw in the Map Area.

Add a Point to Buffer

A point can be added to the map by clicking anywhere on the map.

To create a buffer around the point, the buffer's distance and units must be chosen. Units may be in miles, feet, kilometers, or meters. Once the buffer is created, a layer can be chosen from which to select points. Clicking **Select with Buffer** will select points of the chosen layer which intersect the buffer area.

Add a Line to Buffer


A line can be added to the map by clicking and dragging anywhere on the map.

To create a buffer around the line, the buffer's distance and units must be chosen. Units may be in miles, feet, kilometers, or meters. Once the buffer is created, a layer can be chosen from which to select points. Clicking **Select with Buffer** will select points of the chosen layer which intersect the buffer area.

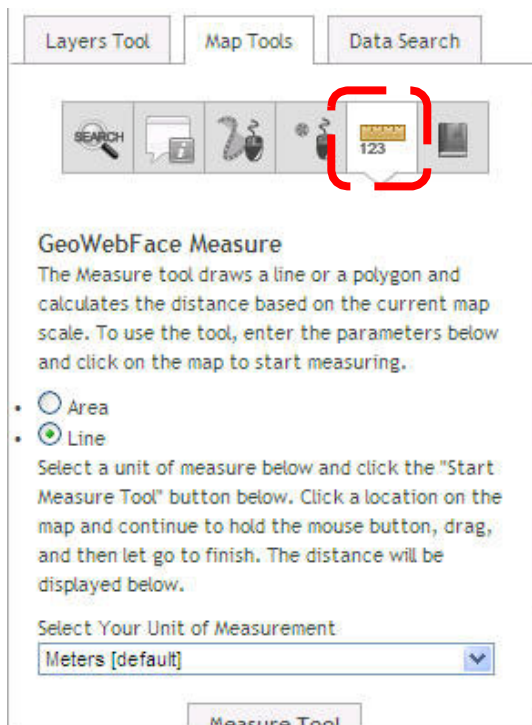
Add a Polygon to Buffer

A polygon can be added to the map by clicking and dragging anywhere on the map.

To create a buffer around the polygon, the buffer's distance and units must be chosen. Units may be in miles, feet, kilometers, or meters. Once the buffer is created, a layer can be chosen from which to select points. Clicking **Select with Buffer** will select points of the chosen layer which intersect the buffer area.

Graphics drawn on the map can be erased by clicking the "Clear Map Graphics" icon: 

Map Tools - Measure



The **Measure Tool** allows you to measure distances and areas on the map.

When you select the **Measure Tool** a new panel will open.

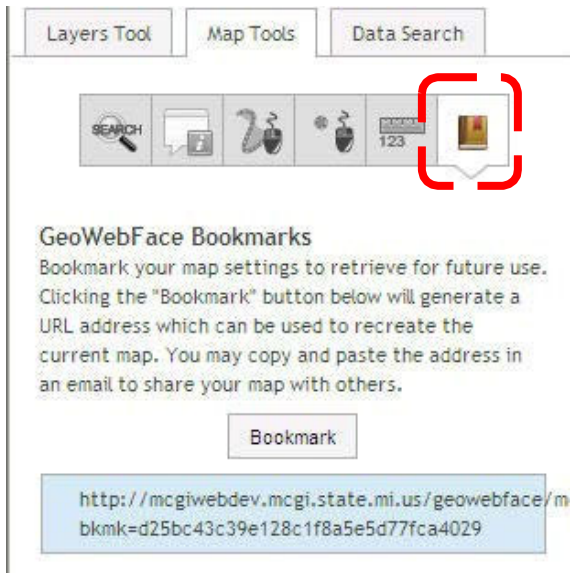
The tool gives you the option to measure an area or a line on the map created by you.

Select the unit of measurement you want from the dropdown box. The options are; miles (default) feet, kilometers, and meters.

Click on the **Measure Tool** button to perform the desired measurement.

Using the mouse, draw the line or polygon on the **Map Area** window. After it's drawn, the result will be displayed at the bottom of the Measure Tool panel.

Map Tools - Bookmark



The **Bookmark Tool** allows you to save and share a map that has been created in the GeoWebFace. Selecting the bookmark icon generates a URL that can be copied to your favorites, a document or pasted into an email and sent to other people.

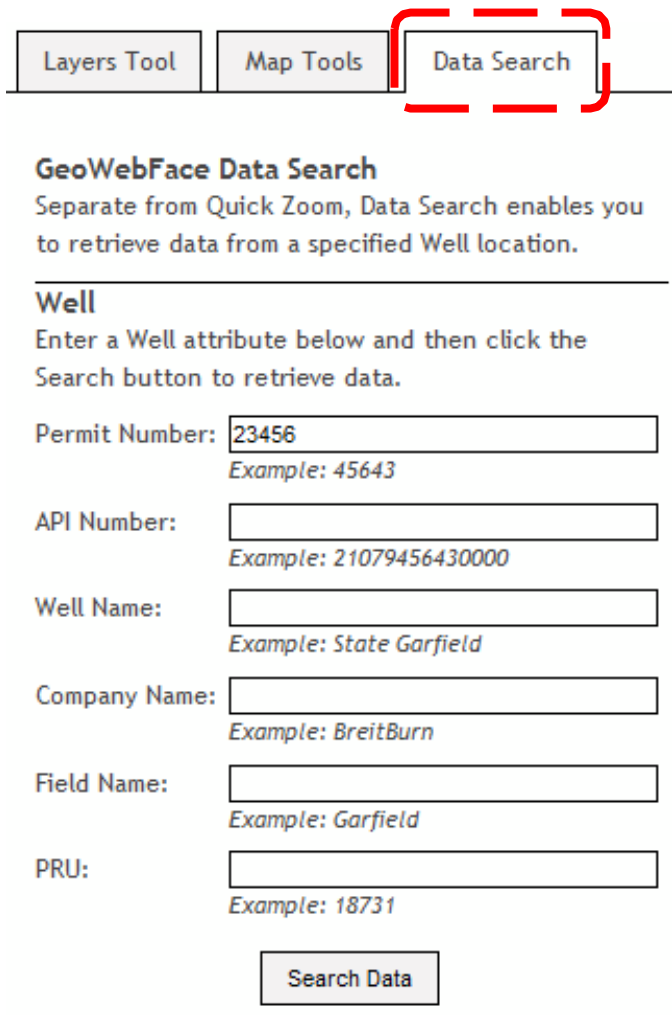
When the bookmark is activated it will open the map in the web browser. That person can use the map, get additional information from the GeoWebFace, modify the map, save and or share the results via bookmark.

GWFF► To take the best advantage of a **Bookmark**, the web browser window should be maximized before pasting the bookmark URL into the address bar of your browser.

Result can vary depending on differences between computer configurations and web browser applications.

Left Panel - Data Search tab

Data Search



Layers Tool **Map Tools** **Data Search**

GeoWebFace Data Search
Separate from Quick Zoom, Data Search enables you to retrieve data from a specified Well location.

Well
Enter a Well attribute below and then click the Search button to retrieve data.

Permit Number:
Example: 45643

API Number:
Example: 21079456430000

Well Name:
Example: State Garfield

Company Name:
Example: BreitBurn

Field Name:
Example: Garfield

PRU:
Example: 18731

Search Data

The Data Search tool allows the user to search for and display information for selected oil and gas wells.

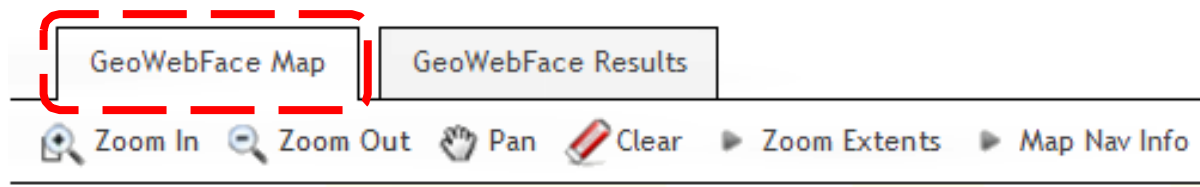
Fill in at least one of the fields and then select the Search Data icon. If data is found, a new window will appear at the bottom of the Data Search panel.

Select the GeoWebFace Results tab to view the information on the oil and gas well(s). Data and scanned files can be downloaded for future reference.

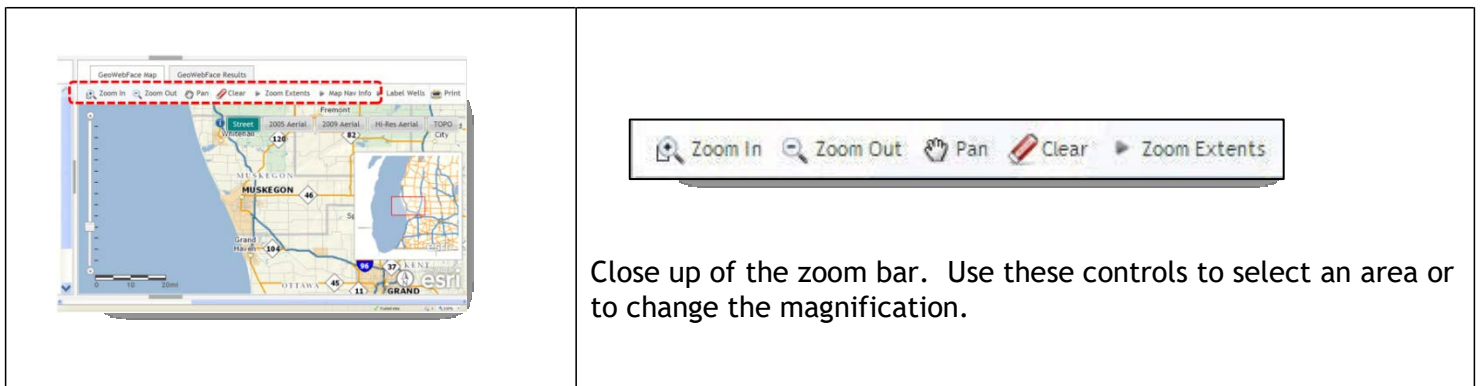
If you return to this tool during a session be sure to delete previously entered data.

Currently there is a limit of 200 records that can be exported / downloaded to Excel at a time

Map Area - GeoWebFace Map tab



The GeoWebFace Map tab shows the information you have chosen in the Map Area. The six controls for the GeoWebFace Map Tab are located along the top edge of the Map Area. The controls include- scaling and location controls that allow you to zoom in or out or pan (move visible area) and clear selection criteria.



Close up of the zoom bar. Use these controls to select an area or to change the magnification.

GWF Map - Zooming

There are five ways to zoom the map:

1. You can click either **Zoom In** or **Zoom Out**. Holding down Shift, clicking on the map and dragging a box around an area will zoom into, or away from, that area.
2. Clicking **Zoom Extents** will reveal a dropdown menu. You can choose **Full Extent** (a map of the entire state), **Previous Extent** (your previous view), or **Next Extent**.
3. There is a scroll bar that can be used. To zoom out, move the square tab on the scroll bar down. To zoom in, move the tab up. This is similar to the sliding zoom bars found in other online mapping applications.
4. The scroll wheel of a mouse can be used to zoom. Rolling the wheel away from the user zooms the map in. Rolling the wheel toward the user causes the display to zoom out.
5. Use the + and - keys in the numeric keypad to increase (+) or decrease (-) the zoom in effect.

GWF ► Zoom Out reduces the magnification of the map area - more area is shown with less detail.

GWF ► Zoom In increases the magnification of the map area - less area is shown with more detail.

GWF Map - Panning



Pan

To pan (move what is in the viewing area) select the Pan Icon then use the mouse to move the area seen in the Map area. Unless another function has been selected the pan function is active. Press the left mouse and drag. Pan will turn off the effect of the zoom buttons.

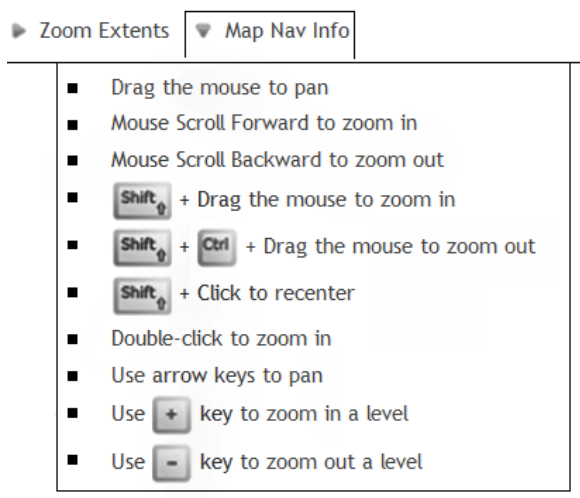
GWF Map - Clearing



Clear

To clear selections from the map, select the Clear Icon. The clear function should be used between searches.

GWF Map - Map Nav Info tab



The Map Nav Info tab provides a list of instructions on navigating around the map window.

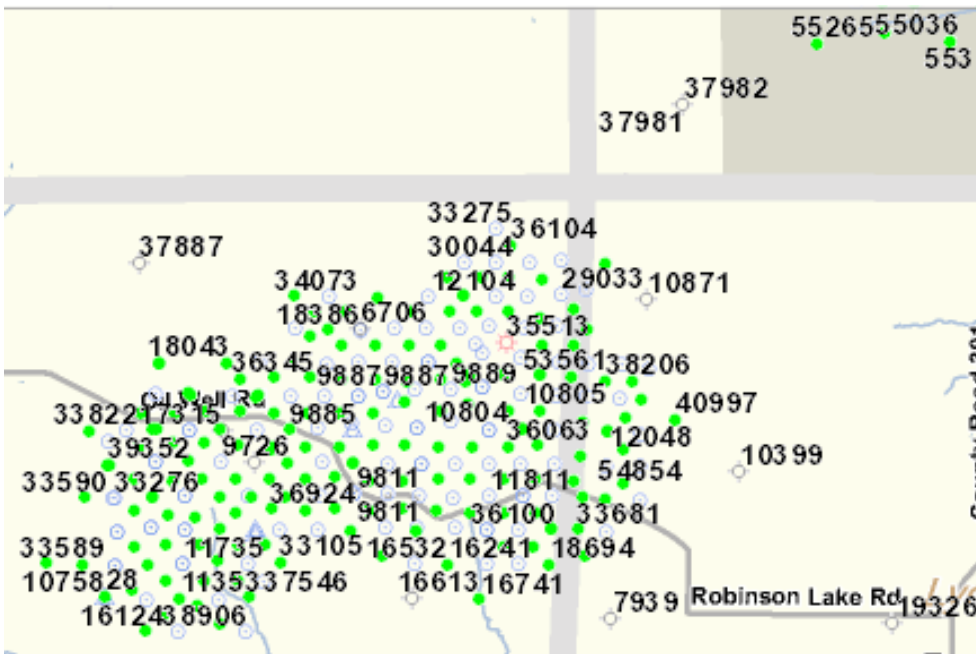
GWF Map - Label Wells



Label Wells provides a list of methods of labeling the oil and gas wells in the Map Area.

The default for Label Wells is **No Label**.

The following example illustrates labeling oil and gas wells with permit numbers.



An example of oil and gas well locations **Labeled** by Permit Number.

You can also label oil and gas locations with API Numbers or Well Name & Number.

Some labeling may be obscured if you are not zoomed in enough to display sufficient detail.

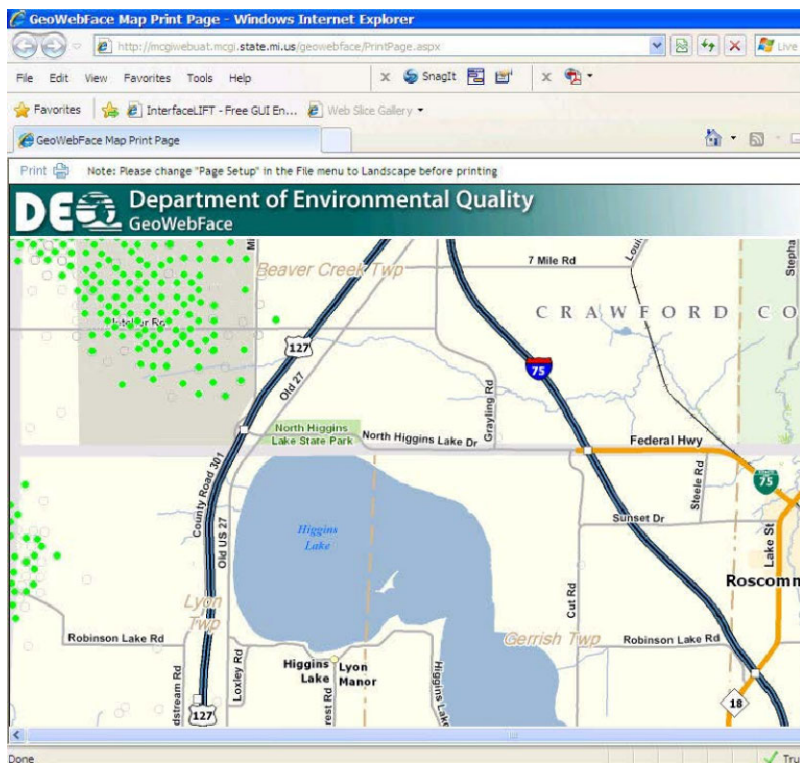
GWF Map - Printing



Print opens the map, currently in view, in a new browser window, without the icons or other components that are seen in the Main View working window.

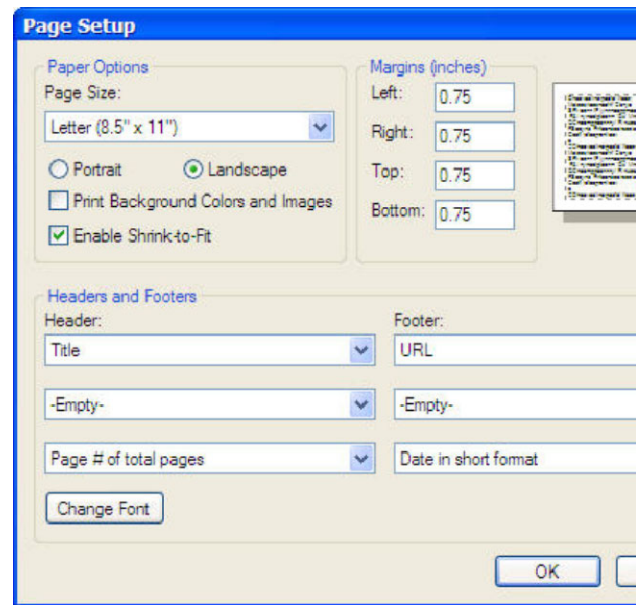
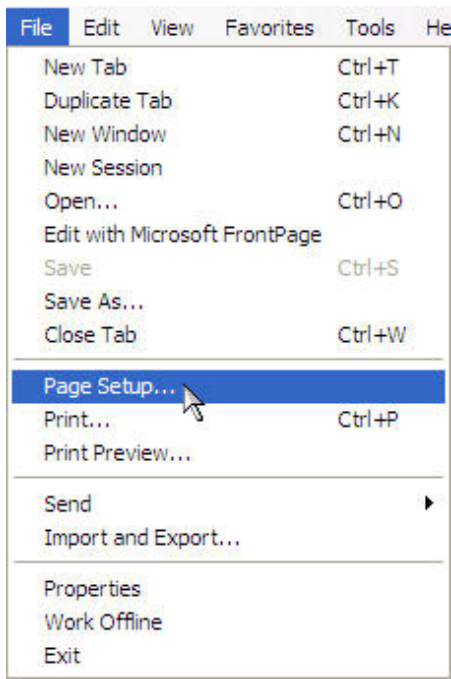
Select the “Print” icon in the upper right area of the map panel to print a map.

CWF ▶ Printing functions provided in the GeoWebFace are basic and may not be suitable for some projects.



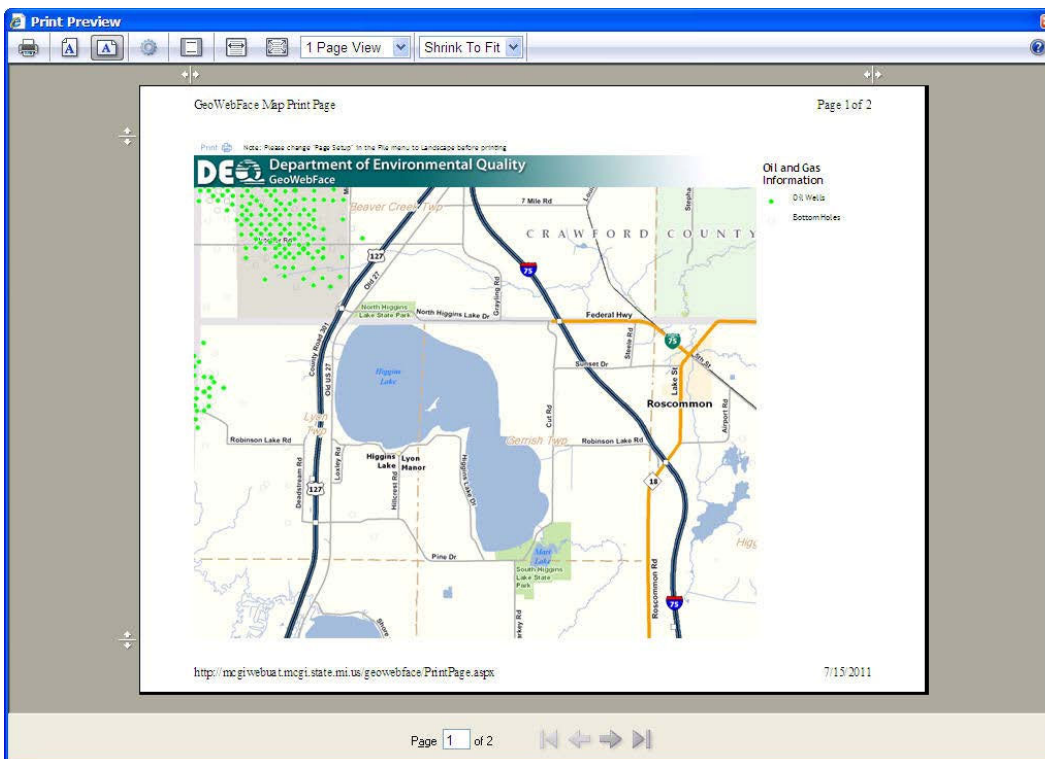
The resulting screen will include a header and a legend.

“Page Setup” may be accessed via the File menu on your browser.



Paper Options are located at the top left corner of the Page Setup window. "Landscape" is the ideal orientation for printing. Some formatting, like transparency, may not be correctly translated the final printed product.

You can add information to the printed map by modifying the Headers and Footers options in Page Setup.





The resulting printed image may be zoomed into a different level than what is seen in the map view.

Map Area - GeoWebFace Results tab

GeoWebFace Map

GeoWebFace Results

API Number	Permit Number	Well Name & Number	Well Type	Well Status	Total Depth	Producing Formation	Download
------------	---------------	--------------------	-----------	-------------	-------------	---------------------	----------

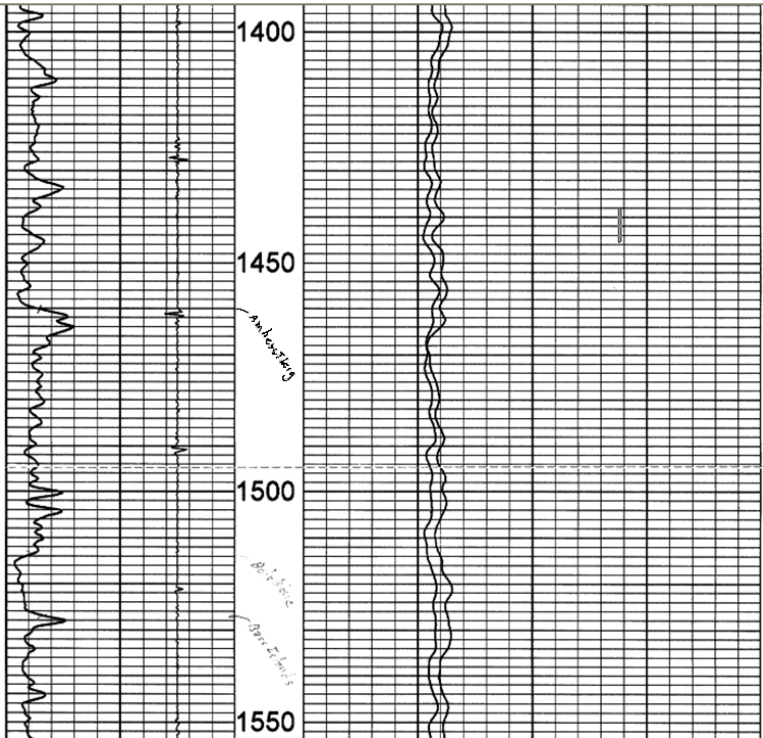
 [Download to Excel](#) |  [Go to the GeoWebFace Tutorial](#)

If you have selected an oil and gas well or a group of wells, choosing the **GeoWebFace Results** tab provides access to the following scan documents, computer generated reports and or files:

- ① **RasterLogs,**
- ② **Drillers Logs,**
- ③ **Well File,**
- ④ **Summary Report, and**
- ⑤ **Map It.**

These records are discussed below.

GWF Results - RasterLogs

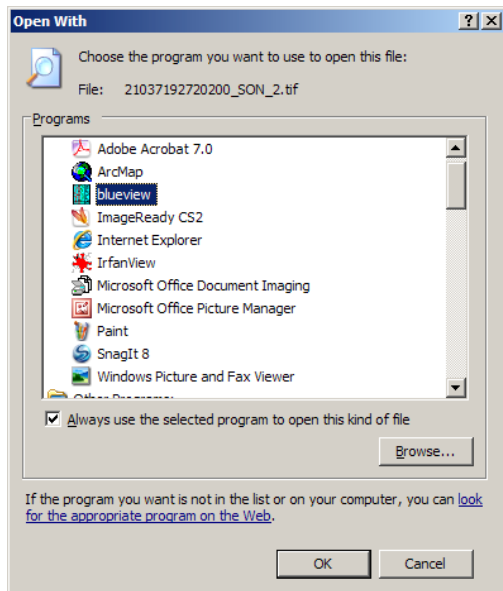


RasterLogs are scanned copies of geophysical logs that have been filed with the OOGM. At the left is a typical RasterLog from an oil and gas well.

To download a large number of oil and gas digital records organized by [API County number](#), select the county folder as outlined in the [Using FTP](#) topic.

To acquire a complete set of digital oil and gas records please go to the [Scanned Digital Oil & Gas Records web page](#).

Viewing RasterLogs



Most of the OOGM RasterLogs are available in TIF format. In order to view and print TIF files like RasterLogs additional software is needed. There is free software available on the web.

BlueView is one such freeware package designed specifically for oil and gas applications. Schlumberger BlueView is available at: http://www.slb.com/services/characterization/software/data_utilities/blueview_log_image_software.aspx

To make BlueView the default viewer for all TIF files, download and install BlueView.

Right click one of the RasterLogs (or other TIF file) saved to your hard drive, right click then select Open With, then select Choose Program. In the Open with Dialog box, select BlueView and put a check in the box to the left of Always use the selected program to open this kind of file. This will allow your computer to use BlueView when you select any TIF / RasterLog file.

CWF ▶ The process outlined above can be used to change or add file/software default combinations. Only one program can be assigned as the default for any given file format.

GWF Results - Drillers Logs

19-81-14 (R) TD 3226 in Monroe
Lobanon Twp., (Clinton County) (Dry)

J. E. Hood Permit #10455
Jess Guernsey #1
Drilling Contractor: Allegan Pipe & Supply (Cable)

Location: NE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ section 19, T.8N., R.14W.
990' from south and 990' from west line of quarter section.

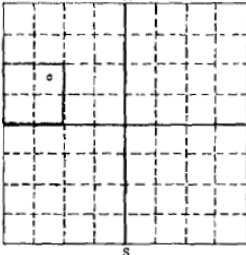
Elevation: 652.9 feet above sea level.

Record by: D. Myers from driller's log & incomplete samples 700-3196.

	Thickness (feet)	Depth (feet)
PLEISTOCENE:		
Drift:		
Sand and gravel	185	185
PENNSYLVANIAN:		
Saginaw:		
(?) Perma sand (flow fresh water at 190)	285	470

Oil and Gas Well Drillers Logs (DL) are scanned copies of the formation description and formation top picks that have been filed with the Office of Oil, Gas, and Minerals. These files are available as PDF files. As PDFs they can be viewed in your web browser and or saved for subsequent access.

GWF Results - Well Files

APPLICATION FOR PERMIT TO DRILL A WELL FOR OIL, GAS, BRINE DISPOSAL, HYDROCARBON STORAGE OR FOR SECONDARY RECOVERY Under Authority of Act 61, P.A. of 1939, As Amended.		MAIL TO: OCT 12 1979 STATE OF MICHIGAN DEPARTMENT OF NATURAL RESOURCES GEOLOGICAL SURVEY DIVISION Box 30028, Lansing, Michigan 48909	
See Reverse Side Before Filling Out This Application			
LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT - 640 ACRES		1. Application to drill a well for: Oil and/or Gas	2. Date October 12, 1979
		3. Fee enclosed \$ 100.00	
		4. Applicant's name(s) as it is on the surety bond(s) Hunt Energy Corporation	
		5. Permanent address 3401 E. Saginaw, Suite 204, Lansing, MI 48912	
		6. Phone (517) 332-3527	
7. Lease name (owner of mineral rights) Robert Hebel, Sr.		8. Well No. 1-9	
9. Surface owner Same		11. Phone (517) 834-5492	
10. Address 6244 E. Walker, Rt #2, Ovid, MI 48866		12. Drilling contractor	
13. Address		14. Phone	

Oil and Gas Permit Well Files (WF) are scanned copies of the documents that are generated over the life of an oil and gas well - from application to plugging. The content of the files depends on the history and activities at the site. Well Files are available as PDF file format. As PDFs they can be viewed in your web browser and or saved for subsequent access.

GWF Results - Report

Selecting the **Report** option will bring up a summary report for the selected oil and gas well.

A Well Summary Report is available for each oil and gas well you have in the current subset by selecting the **Report** option in the **Download** column. The Report is a "one well at a time" process.

The WELL SUMMARY REPORT contains the following data (in alphabetical order) ❖ API NO: 21-###-####-##-## ❖ PERMIT NO: ##### (in the report header, the following data would be found in the body of the report) ❖ Bottom Location County Name ❖ Bottom Location Latitude ❖ Bottom Location Longitude ❖ Bottom Location QTR QTR QTR ❖ Bottom Location Town Range Section ❖ Depths Measured From: ❖ Drilled Total Depth ❖ Drilling Completed Date ❖ Drilling Permit Issued Date ❖ Drilling Started Date ❖ Elevation Depth ❖ Formation at Total Depth ❖ Measurements taken from top of: Ground:, Derrick Floor:, Kelly Bushing: ❖ Operator ❖ Surface Location County Name ❖ Surface Location Latitude ❖ Surface Location Longitude ❖ Surface Location QTR QTR QTR ❖ Surface Location Town Range Section ❖ Surface Location Township ❖ Surface Location Township ❖ True Vertical Total Depth ❖ Well Name ❖ Well Status ❖ Well Type

To get data for multiple wells, you can [export a data table to Excel](#) or, go to other OOGM web pages, to [download files](#) and or the [online oil and gas database](#) are additional tools that may be better suited to your needs.

More data options are listed in the Additional resources section.

GWF Results - Map It

If you choose the **Map It** option you will be returned to the **Map View**. From here you can modify the existing selection or choose a new group of oil and gas wells. This will allow you to print a map or create a Bookmark to save the information for later reference.

The Lowdown on the Download

Downloading refers to the methods by which you access digital information from a remote computer, copy it, and save it, to another computer. As it turns out, almost everything we do on the Web is some form of downloading. For instance, when you access a web page, you are actually downloading text and associated files from a web server. As the digital data arrives, the web browser assembles it and displays the web page.

Different needs, levels, and options

There are several ways to save what you see on a web page or site. These usually involve saving selected components of a web site (like graphics or charts), screen capture software, and or web site copying software. Putting the pieces back together can be tedious and not terribly rewarding, but it can be done.

The data behind the GeoWebFace is available to you whenever, wherever you have access to the internet. So downloading files may not even be necessary.

If you will be working 'off-line' or need to compile the data for further study, then downloading will be a part of your activities. The downloaded files require various programs to use them. Most of the programs are commonly available or can be downloaded from the web. Often there are free or low cost options as well as expensive, robust, expansive options. We have found it helpful to try the free or low cost options. This can help you better understand what can be done and what you might want in a more expensive solution. For example, if you are not going to be interpreting and correlating geophysical logs, then you likely do not need to spend thousands of dollars when a free graphics viewer will work just as well. The low cost option will likely be slower and have fewer options but they have a much shorter learning curve. Sometimes multiple programs may be needed to convert raw data to useful, understandable information.

If you have a file open

If you select a file from the **GeoWebFace Results** tab and open it in your browser you can save the file by selecting File/Save in the menu bar.

Navigate to where you want the file to be stored on a local hard drive.

Press enter to save the file. This process is ok for one or two files. If you want a larger number of files FTP is a likely next step.

Exporting GWF Results to Excel

If you want information about: ❖ API Number, ❖ Permit Number, ❖ Well Name and Number, ❖ Company Name, ❖ Address, ❖ City, ❖ State, ❖ Zip, ❖ County Name, ❖ WH Township Name, ❖ TRS, ❖ QTR QTR QTR, ❖ WH_Latitude, ❖ WH_Longitude, ❖ Slant, ❖ BH_Lat, ❖ BH_Long, ❖ BH_Qtr, ❖ Well Type, ❖ Well Status, ❖ Total Depth, ❖ Formation at Total Depth, ❖ Permit Date, ❖ Drilling Started, ❖ Well Completed, ❖ PRU, ❖ Measured From, ❖ Rotary Table, ❖ Kelly Bushing, ❖ Derrick Floor Data.

Then consider the **Download to Excel** option.

- After selecting the group of oil and gas wells, select the GeoWebFace Results tab. If the list has the oil and gas wells you want listed ... (if not, modify the selection process)
- Select Download to Excel
- Select Save option
- Select the default OK (or press the Enter key). The file is now on a local hard disk.
- Currently there is a limit of 200 records that can be exported / downloaded to Excel at a time.

Changing the format of API Numbers

Excel displays the API Number in scientific notation - not too useful.

To change from 2.1113E+13 to the hyphenated API format 21-113-12345-00-00 follow the following steps

- Select the column (A) that has the API number in it
- Right mouse button in the marked column
- Select Format Cells...
- Another dialog box opens
- In the section labeled Category: Select the Custom option
- In the section labeled Type select 0 (zero)
- In the box immediately under Type enter 00-000-00000-00-00 then press enter
- The dialog boxes disappear and the numbers you selected are now in hyphenated API format

Learn more about [how API numbers are created](#).

Larger data sets and FTP

FTP stands for File Transfer Protocol. FTP is used to make files available over the Internet.

To access the digital records, shapefiles and other downloads, got to:

	URL: ftp://ftp.deq.state.mi.us/geowebface	
	User ID: GeoWebFace	
	Password: Geology(1)	

It is recommended to copy and paste the URL into the address bar.

The GeoWebFace FTP server is set up for viewing and or downloading of files.

The three main sets of files are the ① Drillers Logs, ② Permit Well Files, and ③ RasterLogs. These files are organized into county folders. For more details about digital oil & gas files go to http://www.michigan.gov/deq/0,4561,7-135-3311_4111_4231-150609--,00.html

When you enter the FTP Internet address into the Address bar and then press ENTER, the FTP site opens in the main Internet Explorer window. In this window, you can:

To open a file or folder, select it.

To download a file or folder, right-click on it, and then select Save Target As.

GWF► For example if you were to select folder 007 you would be able to download all of the files for Alpena County. If you open a county folder you can download or read individual files.

There are many third party applications that can help make FTP even easier to use.

To create a shortcut to open an FTP site:

- Select Start, and then select My Computer.
- In My Computer, select My Network Places, and then select Add a network place.
- In the wizard, select Choose another network location, and then select Next.
- Enter the name of the FTP site, with **FTP://** in front of it, and then select Next.

To use a name & password, clear the “Log on anonymously” check box. Type a user name, then select Next.

To have the FTP site open when you're done setting up the shortcut, just select Next. If you do not want the FTP site to open after you're done setting up the shortcut, clear the Open this network place when I select Finish check box. Select Finish. A shortcut to the FTP site appears in the My Network Places folder. You can drag that shortcut to your desktop so that it's easy to access.

CWF▶ To find third party FTP applications go to www.cnet.com / download then use the search function to find FTP programs. The list has hundreds of choices, many are free. Two options that you might want to consider are: Core FTP @ www.coreftp.com and or FileZilla @ www.filezilla-project.org.

Want more information about FTP?

Enter “using FTP” in your web search engine. The result will provide many choices for more information.

GIS Data Availability

Oil and gas well locations are available as a series of shapefiles on the GeoWebFace FTP site. Eventually some of the geological GIS layers will be made available and will also be on the FTP site. Access to the FTP server is gained by sending an email to DEQ-GeoWebFace@michigan.gov to get the FTP user-ID and password. Most of the GIS base layers (roads, hydrology, sections lines, 2005 and 2009 aerial photos) that make up the base maps and the Bedrock and Quaternary Geology are available on the Michigan Spatial Data Library. To use these files you will need software that can work with shapefiles.



To get the shape tables go to:

<http://www.michigan.gov/cgi/>

select Spatial Technology

select Geographic Data Library (on left)

select Michigan Geographic Data Library (center of page)

select Geographic Extent Select County

(or State for statewide data).

Most of the GIS data are in the shapefile format in Michigan GeoRef NAD 1983, meters.

Additional Resources

The list below contains links to selected sites that relate to the GeoWebFace.

GeoWebFace information Web page

<http://www.michigan.gov/deqgeowebface> (DEQ GeoWebFace - one-word - all lower case)

Access the GeoWebFace Application: <http://ww2.deq.state.mi.us/geowebface/>

GeoWebFace User Guide

http://www.michigan.gov/documents/deq/GeoWebFace_Users_Guide_375273_7.pdf

GeoWebFace Layers and Descriptions

http://www.michigan.gov/documents/deq/GeoWebFace_Layers_and_Descriptions_376707_7.pdf

GeoWebFace API Numbers to County Names

http://www.michigan.gov/documents/deq/API_to_County_Name_376708_7.pdf

Oil and gas web page

http://www.michigan.gov/deq/0,1607,7-135-3311_4111_4231---,00.html

Download database files

http://www.michigan.gov/deq/0,4561,7-135-3311_4111_4231-188295--,00.html

Online Oil and Gas database

<http://ww2.deq.state.mi.us/mir/>

Geology in Michigan

<http://www.michigan.gov/deq/deqgeologyinmichigan>

(deq geology in michigan - no spaces - all lower case) out-of-print Michigan geology publications.

Over 1,500 files make up the

[Digital Geology Library Catalog](#) - a listing of publications and other resources. Most of the digital files are in Adobe PDF format. If you download the catalog file you can access the linked files without returning to the web site. Where possible, bookmarks are used to aid in navigating the digital files. Word searching is possible in the catalog and most of the linked digital files.

Digital Oil & Gas files

http://www.michigan.gov/deq/0,4561,7-135-3311_4111_4231-150609--,00.html

Michigan GIS shapefiles

http://www.michigan.gov/cgi/0,1607,7-158-52927_53037_12693---,00.html

then select 'Michigan Geographic Data Library'

Email the GeoWebFace Team at DEQ-GeoWebFace@michigan.gov

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